Antimicrobial agent use increases infections with resistant bacteria: A FoodNet case-control study of sporadic, multiresistant *Salmonella* Typhimurium DT104 infections, 1996-1997

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Multiresistant *Salmonella* serotype Typhimurium defmitive type 104 (DT 104) has rapidly disseminated to cause almost 10% of human *Salmonella* infections in the United States. To determine risk factors for acquiring sporadic multiresistant DT104 infections, we conducted a population-based case-control study in five Foodbome Diseases Active Surveillance Network (FoodNet) sites (CA, CT, GA, MN, OR) in 1996-1997. S. Typhimurium isolates were phage typed and tested for antimicrobial resistance at CDC. Telephone interviews were conducted with persons with multiresistant DT104 infections (case-patients) and one or two age and telephone exchange-matched controls. Among the 301 S. Typhimurium isolates tested during the 12-month study, 84 (28%) were multiresistant DT104; of these, 44 (52%) were included in the case-control study. Case-patients were more likely to have taken antimicrobial agents in the 4 weeks before illness onset than were controls during a similar time period; 15 (34%) of 44 case patients took antimicrobial agents versus only 11 (13%) of 85 controls (matched OR [mOR]=3.3, 95% CI 1.2-9.8). In particular , case-patients were more likely to have taken antimicrobial agents to which DT 104 is resistant (amoxicillin [n=9] and penicillin [n=I]) than were controls (amoxicillin [n=3] and sulfamethoxazole [n=I]; mOR=5.8, 95% CI 1.5-33.1). No other risk factors for acquiring a multiresistant DT104 infection were identified. The rapid spread of DT104 is likely related to antimicrobial agent use in food animals, however to reduce the burden of this disease in humans, prudent antimicrobial agent use among humans and food animals is necessary.

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